JOLLS: Journal of Language and Literature Studies
Website: https://journal-center.litpam.com/index.php/jolls/index
Email: jolls@litpam.com
DOI: https://doi.org/10.36312/jolls.v6i3.4990

September 2026 Vol. 6, No. 3
e-ISSN: 2808-1099
pp. 1171-1185

The Role of Digital Literacy and Digital Competence in Relation to Speaking Performance in the PBSI Speaking Course

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Received: April 2026; Revised: July 2026; Accepted: August 2026; Published: September 2026

Abstract

This study examines the associations between digital literacy, digital competence, and speaking performance among students enrolled in the Speaking Skills Course within the Indonesian Language and Literature Education (PBSI) program at the University of Muhammadiyah Pringsewu Lampung, even semester 2025/2026. Although digital technology use in higher education continues to expand, its association with students' oral communicative performance remains underexplored, particularly in regional university contexts. Using a quantitative correlational design with total sampling, the study involved 60 participants from two classes (Class A and Class B, n = 30 each). Digital literacy, digital competence, and speaking performance were measured using a Digital Literacy Questionnaire adapted from Gilster (1997) and Hague and Payton (2010), a DigComp 2.1-based questionnaire (Carretero et al., 2017), and an oral performance rubric assessing pronunciation, fluency, accuracy, vocabulary, and discourse organization. Pearson correlation analysis showed that digital literacy ($r = 0.621$, $p < 0.05$) and digital competence ($r = 0.583$, $p < 0.05$) were each significantly and positively associated with speaking performance. In a combined multiple regression model, the two variables jointly accounted for 48.1% of the variance in speaking performance ($R^2 = 0.481$, $F = 26.847$, $p < 0.05$). These results indicate that digital literacy and digital competence are distinct yet complementary correlates of speaking performance among the participating students. A specific implication is that speaking-course design in PBSI programs may benefit from deliberately incorporating structured digital literacy and digital competence activities alongside conventional oral-skill instruction.

Keywords: Digital literacy; Digital competence; Speaking skills; Quantitative correlational

How to Cite: Sabila, A., Ariyani, F., & Fuad, M. (2026). The Role of Digital Literacy and Digital Competence in Relation to Speaking Performance in the PBSI Speaking Course. *Journal of Language and Literature Studies, 6*(3), 1171-1185. doi: https://doi.org/10.36312/jolls.v6i3.4990

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INTRODUCTION

Digital technology has become integral to higher education in Indonesia, particularly following the national education reform agenda and the post-pandemic shift toward technology-mediated instruction (Kemendikbudristek, 2022). Within this context, Indonesian Language Education (Pendidikan Bahasa dan Sastra Indonesia, PBSI) faces the specific challenge of preparing graduates who are proficient in the Indonesian language while also possessing the digital competencies relevant to technology-mediated classrooms.

Among the four foundational language skills, listening, reading, writing, and speaking, speaking competence occupies a particularly critical position for prospective language educators. Speaking is the most immediate and socially visible form of language use; it is through oral communication that teachers convey knowledge, facilitate discussion, and build meaningful relationships with their students. Yet speaking skill remains one of the most challenging competencies to develop in higher education

settings, particularly when instruction is conducted in hybrid or technology-mediated environments. The intersection of digital literacy, digital competence, and oral language development thus represents a pressing area for scholarly investigation and pedagogical innovation.

Digital literacy, broadly defined as the ability to access, evaluate, create, and communicate information using digital technologies (Gilster, 1997; Buckingham, 2006), has emerged as a foundational competency in contemporary education. Beyond basic technological proficiency, digital literacy encompasses critical thinking, information evaluation, and responsible digital citizenship. Digital competence, as conceptualized by the European Commission DigComp framework (Carretero et al., 2017), extends this notion by identifying specific functional and critical competencies across five key areas: information and data literacy, communication and collaboration, digital content creation, safety, and problem-solving. Together, digital literacy and digital competence represent the cognitive, technical, and ethical capacities required for effective participation in digital societies—capacities that are increasingly relevant to language education.

Conceptually, digital literacy and digital competence may be associated with speaking performance through several plausible pathways. Access to multimodal digital input, such as podcasts, video lectures, and digital storytelling, is theorized to expose students to models of pronunciation and discourse organization beyond classroom input (Hague & Payton, 2010; Nation & Newton, 2009). Digital communication and collaboration activities are theorized to provide opportunities for turn-taking, real-time linguistic decision-making, and vocabulary use in authentic exchanges (Bygate, 2001). Digital content-creation tasks, such as recording video presentations or podcasts, are theorized to require planning and rehearsal that may support fluency and accuracy. These pathways inform the present study's expectation that digital literacy and digital competence are positively associated with speaking performance, while remaining consistent with a correlational rather than causal interpretation of the data.

The Speaking Skills Course within the PBSI program at the University of Muhammadiyah Pringsewu Lampung provides a particularly valuable site for examining these intersections. This course is designed to develop students' oral communication abilities across a range of formal and informal contexts, including public speaking, academic discussion, storytelling, and instructional delivery. As students in this course are future language educators, the development of their speaking skills is inseparable from their capacity to navigate digital tools that increasingly mediate classroom communication, such as video presentations, podcast assignments, online discussion forums, and digital storytelling platforms.

A growing body of research has examined the relationship between digital literacy, digital competence, and language learning outcomes, though the specific nexus of these variables with speaking skill development in Indonesian higher education remains underexplored. Internationally, Hatlevik and Christophersen (2013) demonstrated that students with higher levels of digital competence exhibited greater motivation and self-efficacy in language learning tasks. Similarly, Heitink et al. (2016) found that digital literacy positively influenced students' ability to engage in collaborative, technology-mediated oral communication activities. In the Indonesian context, Fuadi et al. (2020) reported that the integration of digital media in language classrooms significantly improved students' confidence and fluency in speaking tasks, while Sari and Wahyuni (2022) identified a positive correlation between digital tool proficiency and academic oral performance among undergraduate students at a Sumatran university.

More recent studies have shifted attention toward the institutional and pedagogical dimensions of this relationship. Rahmat et al. (2023) examined the role of digital competence frameworks in curriculum design for language teacher education in

Indonesia, arguing that current curricula insufficiently address the oral communication demands of technology-integrated classrooms. Arifin and Nurhayati (2024) explored the use of digital storytelling platforms as mediators of speaking skill development among PBSI students, finding significant improvements in coherence, fluency, and prosodic features. However, these studies have been conducted predominantly at universities in Java and urban centers, leaving a gap in the literature concerning students at regional universities such as those in Lampung, where contextual factors—including infrastructure, digital access, and sociolinguistic background—may significantly shape the relationship between digital competence and speaking skill outcomes.

This study makes a distinct contribution to the existing literature in three respects. First, it situates the investigation within the specific context of a regional Indonesian university (University of Muhammadiyah Pringsewu Lampung), offering empirical data from a population that has been systematically underrepresented in prior studies on digital literacy and language education. Second, unlike previous research that has treated digital literacy and digital competence as interchangeable constructs, this study operationalizes them as analytically distinct yet interrelated variables, examining their independent and combined effects on speaking skill development. Third, this research is conducted specifically within the Speaking Skills Course—thereby anchoring the investigation in a disciplinarily coherent pedagogical context where oral competence is the primary learning objective.

This study aims to examine the levels of digital literacy, digital competence, and speaking performance, and to determine the relationships and joint predictive contribution of digital literacy and digital competence to speaking performance, among students enrolled in the Speaking Skills Course within the PBSI program at the University of Muhammadiyah Pringsewu Lampung. On the basis of the theoretical framework derived from the state of the art, this study proposes the following hypotheses: H1-there is a significant positive relationship between digital literacy and speaking performance among PBSI students; H2-there is a significant positive relationship between digital competence and speaking performance; and H3-digital literacy and digital competence together constitute significant predictors of speaking performance in the Speaking Skills Course.

Based on the foregoing analysis of the existing literature and the identified gaps therein, this study addresses the following research questions: (1) What are the levels of digital literacy, digital competence, and speaking performance among PBSI students enrolled in the Speaking Skills Course at the University of Muhammadiyah Pringsewu Lampung? (2) Is there a significant relationship between digital literacy and speaking performance? (3) Is there a significant relationship between digital competence and speaking performance? (4) Do digital literacy and digital competence jointly and significantly predict speaking performance?

METHOD

Research Design

This study employed a quantitative correlational research design, which is appropriate for examining the degree and direction of relationships between variables without manipulating them (Creswell, 2014). Specifically, this research investigates the relationships between digital literacy (X1) and digital competence (X2) as independent variables, and speaking skills (Y) as the dependent variable. The correlational design was complemented by multiple linear regression analysis to assess the predictive power of the two independent variables on speaking skill performance. This approach aligns with Fraenkel et al. (2012), who assert that correlational studies are particularly suited to

educational research seeking to understand naturally occurring relationships among cognitive, technological, and performance-related variables.

Research Population and Samples

The population of this study comprised all students enrolled in the Speaking Skills Course in the PBSI program at the University of Muhammadiyah Pringsewu Lampung during the even semester of the 2025/2026 academic year. The total population consisted of 60 students distributed across two classes. Given the manageable size of the population and to ensure data representativeness, total sampling (saturated sampling) was employed, meaning all members of the population were included as research participants (Sugiyono, 2019). This technique is appropriate when the population is relatively small and the researcher seeks to minimize sampling error (Arikunto, 2013).

Table 1. Research Participants

Class	Number of Students	Semester	Academic Year
Class A	30	Even Semester	2025/2026
Class B	30	Even Semester	2025/2026
Total	60	-	-

Research Instruments and Variables

This study involved three primary variables, each measured using indicators, response formats, and score-interpretation procedures described below. Digital literacy (X1) refers to students' capacity to access, evaluate, and communicate information through digital platforms, measured using a Digital Literacy Questionnaire (DLQ) adapted from Hague and Payton (2010) and Gilster (1997). The DLQ comprised 25 items distributed across the access, evaluation, creation, and communication dimensions of digital literacy, each rated on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). Raw scores were converted to a 0–100 scale and interpreted using five categories (very low, low, moderate, high, very high) derived from the ideal mean and ideal standard deviation of the scale.

Digital competence (X2) was operationalized based on the DigComp 2.1 Framework (Carretero et al., 2017), encompassing five competence areas—information and data literacy, communication and collaboration, digital content creation, safety, and problem-solving—measured through a 30-item Likert-scale questionnaire (six items per area) using the same five-point response format and category-interpretation procedure as the DLQ. Both questionnaires were originally developed in English and were adapted into Indonesian through forward translation, expert review, and back-translation to confirm semantic equivalence. Speaking skills (Y) were assessed using an oral performance rubric adapted from Hughes (2003) and Brown (2004), evaluating five dimensions—pronunciation, fluency, accuracy, vocabulary, and discourse organization—each scored on a 1–5 analytic scale with descriptors distinguishing developing, adequate, and proficient performance, yielding a total score ranging from 0 to 100.

Table 2. Research Variables and Instruments

Variable	Instrument	Scale	Reference
Digital Literacy	Digital Literacy Questionnaire (DLQ)	Likert 1-5	Gilster (1997); Hague & Payton (2010)
Digital Competence	DigComp-Based Questionnaire	Likert 1-5	Carretero et al. (2017)
Speaking Skills	Oral Performance Rubric	0-100	Hughes (2003); Brown (2004)

Data Collection Technique

Prior to data collection, all instruments underwent validity and reliability testing using a pilot sample of 20 PBSI students outside the research population, matched to the research participants in program level and course-enrollment history. Content validity was assessed through expert judgment involving two lecturers in language education and one specialist in educational measurement, who rated item relevance, clarity, and construct alignment; items receiving low expert-agreement ratings were revised before piloting. Construct validity was examined using Pearson Product Moment correlation, with items deemed valid if r-count exceeded r-table at a significance level of 0.05; [author to insert number of items retained per instrument]. Reliability was measured using Cronbach's Alpha, with a minimum acceptable coefficient of 0.70, consistent with the threshold recommended by Nunnally and Bernstein (1994); the pilot test produced Cronbach's Alpha coefficients for the DLQ and for the DigComp-based questionnaire. Items failing validity and reliability criteria were revised or removed prior to the main data collection phase.

Data collection was conducted in three stages. In the first stage, the digital literacy and digital competence questionnaires were administered online via Google Forms to all 60 participants at the beginning of the semester; the form required each participant to enter their student identification number, which was checked against the class roster to prevent duplicate submissions, and an informed-consent statement was presented on the first page, with participation proceeding only after consent was given. In the second stage, speaking skill assessments were conducted in weeks 10 to 14 of the semester, during which each student performed a structured oral task lasting approximately [author to insert duration, e.g., 8–10 minutes], comprising a prepared monologue, a spontaneous response, and a peer discussion activity, in front of a panel of two assessors. Both assessors were lecturers teaching the Speaking Skills Course with prior experience in oral performance assessment; before scoring began, they completed a calibration session in which they jointly rated a set of recorded sample performances and discussed scoring discrepancies until an acceptable level of agreement was reached.

Oral performances were audio- and video-recorded to allow verification of scores, and any scoring discrepancy between the two assessors exceeding [author to insert threshold] was resolved through joint review and reconciliation. Inter-rater reliability was verified using Cohen's Kappa coefficient (Cohen, 1960), which yielded a value of [author to insert obtained kappa value], indicating [author to insert agreement level] agreement between the two evaluators. The overall flow of this research is presented in Figure 1 below. The research proceeded from problem identification and literature review, through instrument development and data collection, to statistical analysis and conclusion drawing.

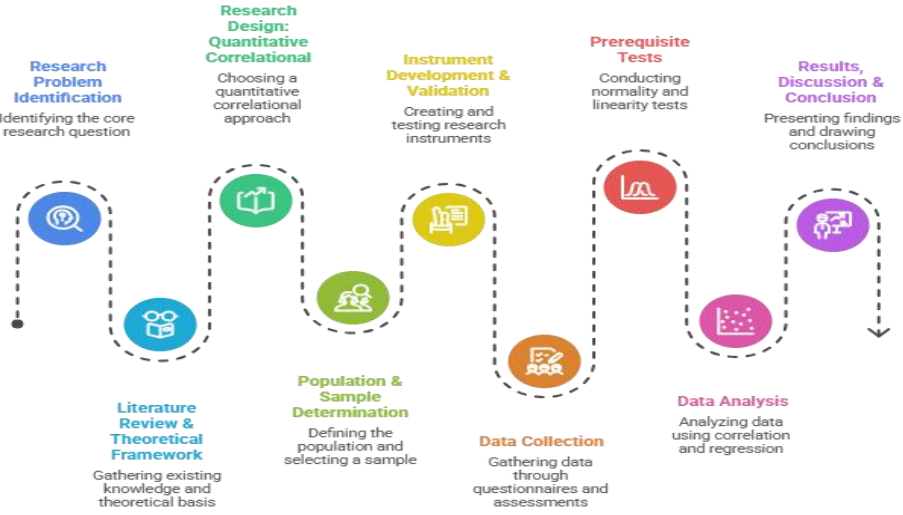

Figure 1. Research Flow of the Study

Data Analysis

Data analysis was conducted in three sequential phases. Prior to analysis, the dataset was screened for missing responses (none were found, as all 60 participants completed both questionnaires and the oral assessment) and for univariate outliers using boxplots and standardized (z) scores, with no cases exceeding ±3 SD. The first phase involved descriptive statistical analysis to determine the mean, standard deviation, and categorical distribution of scores for each variable. The second phase consisted of prerequisite tests, namely the Kolmogorov-Smirnov normality test and the linearity test via ANOVA, to verify the assumptions required for parametric analysis (Field, 2018). For the regression model, multicollinearity was examined using Variance Inflation Factor (VIF) and tolerance values, homoscedasticity was assessed through visual inspection of the standardized residual scatterplot, and independence of residuals was checked using the Durbin-Watson statistic; results of these assumption checks are reported in the Results section. The third phase comprised inferential statistical analysis: Pearson Product Moment correlation to test H1 and H2, and multiple linear regression analysis to test H3, examining the joint predictive contribution of digital literacy and digital competence on speaking skill performance. For the regression analysis, unstandardized coefficients (B), standard errors, standardized coefficients (Beta), 95% confidence intervals, and effect sizes (r^2 for bivariate correlations and R^2/adjusted R^2 for the combined model) were reported alongside exact significance values. The significance threshold was set at $p < 0.05$ for all analyses (Pallant, 2020).

Table 3. Data Analysis Techniques

Research Problem	Analysis Technique	Software
Descriptive level of each variable	Descriptive statistics (mean, SD, category)	SPSS v.26
Relationship X1 - Y	Pearson Product Moment Correlation	SPSS v.26
Relationship X2 - Y	Pearson Product Moment Correlation	SPSS v.26
Joint prediction X1, X2 -> Y	Multiple Linear Regression	SPSS v.26

Ethical clearance for this study was obtained from the Faculty of Teacher Training and Education at the University of Muhammadiyah Pringsewu Lampung. All

participants were informed of the voluntary nature of their participation, the confidentiality of their responses, and the academic purpose of the research prior to completing any instruments. Informed consent was secured in digital form via Google Forms before data collection commenced.

RESULTS AND DISCUSSION

Research Results

In summary, participants demonstrated relatively high levels of digital literacy and digital competence and a good level of speaking performance; both digital literacy and digital competence were positively and significantly associated with speaking performance, and the combined regression model explained a meaningful proportion of the variance in speaking scores. Detailed results are presented below in the order of the research questions.

The descriptive analysis of the three research variables revealed that PBSI students at the University of Muhammadiyah Pringsewu Lampung demonstrated generally high levels of digital literacy and digital competence, alongside a correspondingly good level of speaking skill performance (see Table 4 and Table 5). Digital literacy scores yielded a mean of 78.34 (SD = 7.82), classified in the high category, while digital competence produced a mean of 76.15 (SD = 8.47), also classified as high. Speaking skill scores produced a mean of 74.20 (SD = 9.13), which falls within the good category based on the scoring rubric criteria. The "very low," "low," "moderate," "high," and "very high" categories reported in Table 5 were derived from the ideal mean (Mi) and ideal standard deviation (SDi) of each instrument's possible score range, following the standard five-band conversion procedure [author to insert the exact score intervals used for each category, e.g., very low ≤ Mi−1.5SDi, …, very high ≥ Mi+1.5SDi], so that readers can evaluate where each participant's score falls relative to the possible range of the instrument.

Table 4. Descriptive Statistics of Research Variables

Variable	N	Mean	SD	Category
Digital Literacy (X1)	60	78.34	7.82	High
Digital Competence (X2)	60	76.15	8.47	High
Speaking Skills (Y)	60	74.20	9.13	Good

Table 5. Category Distribution of Variable Scores (n = 60)

Variable	**Very Low**	**Low**	**Moderate**	**High**	**Very High**	**Total**
Digital Literacy (X1)	0 (0%)	2 (3.3%)	12 (20%)	32 (53.3%)	14 (23.3%)	60
Digital Competence (X2)	0 (0%)	3 (5%)	14 (23.3%)	31 (51.7%)	12 (20%)	60
Speaking Skills (Y)	0 (0%)	4 (6.7%)	16 (26.7%)	30 (50%)	10 (16.7%)	60

These descriptive findings are scientifically significant in that they confirm that the study population is not characterized by extreme variability or floor/ceiling effects, thereby supporting the validity of subsequent inferential analyses. The relatively high scores on digital literacy and digital competence are consistent with the national trend of increasing digital exposure among Indonesian university students in the post-pandemic era (Kemendikbudristek, 2022), wherein online learning modalities compelled students to develop functional digital skills as a matter of academic survival. Nonetheless, the slightly lower mean for speaking skills compared to the two digital variables suggests that technological proficiency does not automatically translate into oral communicative

competence, a finding that itself constitutes an important scientific phenomenon warranting deeper investigation.

Prior to inferential analysis, normality and linearity assumptions were verified. The Kolmogorov-Smirnov test confirmed that all three variables were normally distributed (all p-values > 0.05), and the linearity test via ANOVA deviation from linearity confirmed linear relationships between X1-Y and X2-Y (p > 0.05). Results are presented in Table 6. These outcomes validate the use of Pearson correlation and multiple linear regression as the inferential analytical methods (Field, 2018).

Table 6. Results of Normality and Linearity Tests

Test	Variable	Statistic	p-value	Result
Normality (K-S)	Digital Literacy (X1)	0.098	0.200	Normal
	Digital Competence (X2)	0.103	0.174	Normal
	Speaking Skills (Y)	0.091	0.200	Normal
Linearity (X1-Y)	X1 * Y	F = 1.214	0.312	Linear
Linearity (X2-Y)	X2 * Y	F = 1.087	0.389	Linear

H1: The Relationship Between Digital Literacy and Speaking Skills

The Pearson correlation analysis revealed a significant positive relationship between digital literacy (X1) and speaking skills (Y), with r = 0.621 (r^2 = 0.386, p = 0.000 < 0.05). This finding confirms H1 and indicates that digital literacy accounts for approximately 38.6% of the variance in speaking skill performance among the participants (see Table 7).

Table 7. Pearson Correlation Results

Hypothesis	r	r^2	p-value	Decision
H1: X1 → Y	0.621	0.386	0.000	H1 Accepted
H2: X2 → Y	0.583	0.340	0.000	H2 Accepted

This finding is scientifically explicable through the mediating role that digital literacy plays in expanding students' access to authentic oral language input. Students who possess higher digital literacy are more capable of independently accessing multimodal digital resources, such as podcasts, TED talks, video lectures, and digital storytelling platforms, that expose them to varied prosodic patterns, discourse structures, and rhetorical strategies (Hague & Payton, 2010). This self-directed, technology-facilitated exposure functions as a form of extensive listening and viewing, which, according to Nation and Newton (2009), constitutes one of the most effective pathways to speaking fluency development. Furthermore, digitally literate students are more adept at utilizing technology-mediated speaking practice tools, such as voice recording applications, AI-based pronunciation trainers, and video conferencing platforms, thereby accruing greater practice time and more immediate corrective feedback than their less digitally literate counterparts (Godwin-Jones, 2019).

The moderate-to-strong correlation coefficient (r = 0.621) is consistent with findings by Fuadi et al. (2020) and Hatlevik and Christophersen (2013), who similarly documented that students with higher digital literacy demonstrate superior performance on oral language tasks. The coefficient of determination (r^2 = 0.386) also indicates that digital literacy is a substantial but not exclusive predictor, implying that other variables, such as motivation, language anxiety, and instructional quality, continue to exert

independent influence on speaking outcomes. This pattern aligns with the multidimensional model of second language speaking proposed by Skehan (1998), which emphasizes the interplay of cognitive, affective, and resource-related factors in oral performance.

H2: The Relationship Between Digital Competence and Speaking Skills

The Pearson correlation analysis further revealed a significant positive relationship between digital competence (X2) and speaking skills (Y), with $r = 0.583$ ($r^2 = 0.340$, $p = 0.000 < 0.05$), confirming H2. Digital competence thus accounts for approximately 34.0% of the variance in speaking performance a slightly lower but equally significant contribution compared to digital literacy.

The scientific explanation for this relationship lies in the communicative and collaborative dimensions embedded within the DigComp 2.1 framework (Carretero et al., 2017). Competence Area 2—Communication and Collaboration—directly encompasses skills such as sharing information through digital channels, engaging in online discourse, and co-constructing knowledge through digital platforms, all of which are inherently oral and discursive in nature. Students who are more digitally competent in this domain are more frequently engaged in technology-mediated communicative practices that exercise the same cognitive and linguistic mechanisms underlying speaking performance: turn-taking, idea organization, audience adaptation, and real-time linguistic decision-making (Bygate, 2001). Additionally, digital content creation (Competence Area 3) often involves the production of multimodal outputs such as video recordings, digital presentations, and vlogs, tasks which necessitate planning, scripting, and oral delivery providing de facto practice in speaking under conditions that simulate authentic communicative contexts (Arifin & Nurhayati, 2024).

The slightly lower correlation of digital competence compared to digital literacy ($r = 0.583$ vs. $r = 0.621$) may be explained by the fact that digital competence, particularly in its higher-order dimensions (safety and problem-solving), encompasses technical and evaluative skills that are less directly connected to oral language production than the information access and communication behaviors captured by digital literacy measures. This differentiation underscores the analytical value of treating the two constructs as distinct variables, as was a central methodological contribution of this study.

H3: The Joint Prediction of Digital Literacy and Digital Competence on Speaking Skills

The multiple linear regression analysis demonstrated that digital literacy and digital competence, taken together, constituted significant joint predictors of speaking skill performance ($F = 26.847$, $p = 0.000 < 0.05$), with a combined coefficient of determination of $R^2 = 0.481$ (Adjusted $R^2 = 0.463$). This indicates that the two predictors collectively explain 48.1% of the variance in speaking skill outcomes, confirming H3. The regression equation derived from the analysis was: $Y = 18.47 + 0.412X1 + 0.358X2$, as shown in Table 8.

Table 8. Multiple Linear Regression Analysis Results

Predictor	**B**	**Beta (β)**	**T**	**p-value**
Constant	18.47	-	4.213	0.000
Digital Literacy (X1)	0.412	0.387	4.876	0.000
Digital Competence (X2)	0.358	0.332	4.124	0.000
$R = 0.694$ $R^2 = 0.481$ Adjusted $R^2 = 0.463$ $F = 26.847$ $p = 0.000$				

The combined explanatory power of 48.1% is a scientifically noteworthy finding. It indicates that nearly half of the variance in speaking skill performance among PBSI students can be accounted for by their levels of digital literacy and digital competence alone—a substantial proportion that exceeds the explanatory power of either predictor in

isolation. This synergistic effect suggests that digital literacy and digital competence operate not as redundant constructs but as complementary cognitive and functional resources that, when co-present, more fully equip students for the complex demands of technology-mediated oral communication (Calvani et al., 2012).

Scientifically, this joint predictive relationship can be theorized through the lens of the Technology-Mediated Language Learning framework (Stockwell, 2012), which posits that effective technology use in language learning requires both the dispositional capacity to engage with digital environments (digital literacy) and the specific functional competencies to perform targeted communicative tasks within them (digital competence). When students possess both capacities, they are more likely to engage in productive, self-regulated speaking practice through digital channels, to seek and incorporate feedback from technology-mediated assessment tools, and to participate in collaborative oral tasks that develop the interactional dimensions of speaking competence (Chapelle, 2003). The remaining 51.9% of unexplained variance points to the continued importance of affective variables such as speaking anxiety (Horwitz et al., 1986), instructional scaffolding quality, and sociolinguistic factors specific to the Lampung regional context.

The standardized regression coefficients (Beta) reveal that digital literacy ($\beta = 0.387$) exerts a slightly stronger unique predictive contribution than digital competence ($\beta = 0.332$), net of their shared variance. This hierarchy suggests that the broad-based capacity to critically engage with digital information and communication environments—as captured by digital literacy—may be a more foundational prerequisite for speaking development than domain-specific technical competencies. This finding carries important implications for curriculum design: fostering digital literacy as a general academic competency may yield broader benefits for oral communication development than narrowly targeted digital skills training.

Beyond the statistical coefficients, these results carry educational significance in that they point to specific digital behaviors that may be connected to stronger oral performance. Searching for and evaluating credible information online may support the development of well-organized, evidence-based spoken content; accessing multimodal speaking models such as podcasts and video lectures may expose students to varied pronunciation and discourse patterns; producing digital content such as video presentations and vlogs may function as rehearsed speaking practice; communicating through online platforms may build turn-taking and audience-adaptation skills; and receiving technology-mediated feedback, for instance through recorded self-assessment or AI-based pronunciation tools, may accelerate error correction. Taken together, these behaviors suggest that digital literacy and digital competence are not merely background skills but may be functionally embedded in the practices through which students rehearse and refine spoken language.

These findings suggest several curriculum implications for the Speaking Skills Course. Structured digital speaking tasks, such as scripted and rehearsed video presentations, may give students deliberate practice in planning and delivering spoken content. Guided evaluation of online content may help students critically compare models of spoken discourse before producing their own. Podcast projects and video-based reflection assignments may combine content-creation skills with repeated, self-monitored speaking practice. Peer assessment conducted through digital platforms may additionally provide students with structured feedback opportunities that reinforce both communicative and evaluative digital competencies. These are proposed as plausible pedagogical directions consistent with the observed associations, rather than as effects demonstrated by the present correlational design.

Discussion

The findings of this study demonstrate that digital literacy and digital competence are meaningfully associated with speaking performance among PBSI students. Descriptively, participants showed high digital literacy and digital competence, while speaking performance was categorized as good. This pattern suggests that students are relatively comfortable in digital environments, although technological capability does not automatically correspond to equally strong oral performance. Speaking also requires real-time linguistic processing, discourse organization, confidence, audience awareness, and repeated practice. Digital capacity should therefore be understood as an enabling resource for speaking development rather than a substitute for explicit speaking instruction.

The first major finding was the positive relationship between digital literacy and speaking performance ($r = 0.621$, $p < 0.001$). This moderate-to-strong association indicates that students who are better able to access, evaluate, create, and communicate information digitally also tend to obtain higher speaking scores. This finding is consistent with Saraswati et al. (2021), who reported that digital literacy supported autonomous learning in a university speaking course by enabling students to manage and evaluate their learning more independently. It also corresponds with Khairunnisa et al. (2022), who found that digital literacy practices inside and outside the classroom created additional opportunities to engage with speaking materials and technology-mediated interaction. Khasanah and Lestiyanawati (2024) further showed that using YouTube as a digitally mediated learning resource improved students' speaking ability. Collectively, these studies support the view that digital literacy can broaden access to authentic spoken models and facilitate independent rehearsal.

The present study extends this literature because digital literacy was examined as a broad academic capacity rather than as the use of one platform. Students who can locate credible information, compare sources, interpret multimodal content, and communicate through digital media may be better prepared to construct substantive oral responses. Thus, digital literacy may support speaking through content preparation and discourse organization as well as fluency practice. This interpretation is compatible with Nation and Newton's (2009) emphasis on meaningful input and output in oral language development. Nevertheless, the correlational design does not demonstrate causality; more academically engaged or self-regulated students may develop both stronger digital literacy and stronger speaking performance.

The second major finding was that digital competence was also positively related to speaking performance ($r = 0.583$, $p < 0.001$). This result is consistent with the DigComp 2.1 framework, which includes information and data literacy, communication and collaboration, digital content creation, safety, and problem-solving (Carretero et al., 2017). Several dimensions are directly relevant to speaking activities. Communication and collaboration may involve online discussion and audience-sensitive interaction, while digital content creation may require students to plan, record, revise, and publish oral products. Yang et al. (2022) found that an interdisciplinary digital storytelling project improved learners' English speaking performance while engaging them in multimedia production. Similarly, Fu et al. (2022) reported gains in EFL learners' fluency and language use following digital storytelling activities. Although these studies were conducted in EFL contexts, they provide converging evidence that purposeful digital production can create meaningful oral practice.

The slightly stronger association for digital literacy than for digital competence ($r = 0.621$ versus $r = 0.583$) is noteworthy. Digital literacy may capture information-processing and communication practices especially relevant to preparing and delivering spoken content. By contrast, digital competence also includes areas such as safety and technical problem-solving, which are important but less directly connected to oral

performance. This difference supports treating the constructs as distinct rather than interchangeable and suggests that technology-related variables should be analyzed according to their specific dimensions.

The strongest result emerged from the multiple regression analysis. Digital literacy and digital competence jointly explained 48.1% of the variance in speaking performance ($R^2 = 0.481$; adjusted $R^2 = 0.463$), with both variables making significant unique contributions. Digital literacy showed a somewhat stronger standardized contribution ($\beta = 0.387$) than digital competence ($\beta = 0.332$). This pattern suggests complementarity: students may benefit from both the critical capacity to navigate digital information and the functional capacity to use digital tools for communication and content creation. Yu and Wang (2025), studying pre-service language teachers, found that collaborative digital storytelling supported language and digital skill development simultaneously. Likewise, Yu and Zeng's (2026) systematic review concluded that digital storytelling in language education was associated with gains in speaking and other linguistic outcomes, alongside motivation, autonomy, collaboration, and digital literacy. The current study extends this evidence to a PBSI teacher-education context.

At the same time, 51.9% of the variance remains unexplained. This prevents an overly technological interpretation of speaking development. Oral performance is also shaped by linguistic knowledge, prior experience, task familiarity, motivation, anxiety, confidence, feedback quality, and instructional design. Horwitz et al. (1986) demonstrated the importance of anxiety in language-performance settings, while Skehan (1998) emphasized the cognitive demands of balancing fluency, accuracy, and linguistic resources during oral production. Digital literacy and digital competence are therefore important correlates, but only part of a broader system influencing speaking performance.

Pedagogically, the findings support deliberate integration of digital activities into the PBSI Speaking Skills Course. Podcast production, video presentations, digital storytelling, online discussions, source-evaluation tasks followed by oral argumentation, and recorded self- or peer-assessment can connect digital capacities with speaking objectives. Such activities may create opportunities for planning, rehearsal, performance, reflection, and revision. However, the findings should be applied cautiously because the study is correlational and involves 60 students from one institution. Future experimental and multi-institutional studies are needed to determine whether strengthening digital literacy and digital competence produces measurable improvements in speaking dimensions such as fluency, accuracy, pronunciation, vocabulary, and discourse organization.

CONCLUSION

This study concludes that digital literacy and digital competence are significantly and positively associated with speaking performance among students enrolled in the PBSI Speaking Skills Course at the University of Muhammadiyah Pringsewu Lampung. The participants generally demonstrated high levels of digital literacy and digital competence and a good level of speaking performance. Digital literacy showed a moderate-to-strong positive correlation with speaking performance ($r = 0.621$), while digital competence demonstrated a similarly meaningful positive relationship ($r = 0.583$). When considered simultaneously, the two variables explained 48.1% of the variance in speaking performance, with digital literacy making a slightly stronger unique statistical contribution than digital competence. These results support all three hypotheses and indicate that the two digital constructs should not be regarded as interchangeable. Rather, digital literacy represents students' broader capacity to critically access, evaluate, create, and communicate digital information, whereas digital competence represents their more

functional ability to use digital technologies effectively, safely, collaboratively, and productively.

The findings have important implications for language teacher education and particularly for the design of speaking courses in PBSI programs. Digital literacy and digital competence can be integrated with oral-language objectives through structured activities such as podcasts, digital storytelling, recorded presentations, online discussions, digital source evaluation followed by oral argumentation, and technology-mediated peer assessment. Such integration has the potential to provide additional spaces for students to prepare, rehearse, perform, receive feedback, and reflect on their oral communication. Nevertheless, the conclusions must remain within the boundaries of the research design. Because the study used a correlational design with 60 students from a single institution, the findings demonstrate statistical associations and predictive relationships rather than causal effects. Furthermore, slightly more than half of the variance in speaking performance remains attributable to variables outside the present model. Future research should therefore include larger and more diverse samples, examine additional factors such as speaking anxiety, motivation, digital self-efficacy, prior speaking experience, and instructional support, and employ longitudinal, experimental, or quasi-experimental designs to determine whether deliberate digital literacy and digital competence interventions lead to sustained improvements in specific dimensions of speaking performance.

RECOMMENDATION

Based on the findings of this study, several recommendations are directed toward lecturers, program developers, and future researchers. PBSI lecturers teaching the Speaking Skills Course are encouraged to deliberately integrate digital literacy and digital competence development into the course design for instance, by incorporating digital storytelling tasks, podcast production assignments, and technology-mediated peer feedback activities that simultaneously develop oral communication and digital engagement skills. Program coordinators at the University of Muhammadiyah Pringsewu Lampung are recommended to consider the inclusion of a structured digital competence module within the PBSI curriculum, aligned with the DigComp 2.1 framework, to ensure that students develop the functional digital skills that underpin effective language learning in technology-mediated environments.

Future researchers are encouraged to extend this investigation by incorporating additional variables such as speaking anxiety, digital self-efficacy, and instructional scaffolding that may account for the 51.9% of variance in speaking skills left unexplained by the current model. Experimental or quasi-experimental designs that test the effect of targeted digital literacy and digital competence interventions on speaking skill development would further strengthen the causal inferences that the present correlational design cannot fully establish. It is also acknowledged that this study was conducted within a single regional university with a relatively small sample, which limits the generalizability of findings to other institutional and geographic contexts in Indonesia. Replication studies involving larger and more diverse samples across multiple universities in Sumatra and beyond are therefore warranted to validate and extend the theoretical and empirical contributions of this research.

ACKNOWLEDGMENT

The authors gratefully acknowledge the Faculty of Teacher Training and Education at the University of Muhammadiyah Pringsewu Lampung for providing institutional support and facilitating the implementation of this study. Appreciation is also extended to the PBSI program and the lecturers involved in the Speaking Skills Course for their assistance during the research and speaking-performance assessment process. The

authors sincerely thank all students from Classes A and B who voluntarily participated in the study and completed the digital literacy, digital competence, and speaking assessments. The authors also acknowledge the experts who contributed to the validation and refinement of the research instruments and the assessors who supported the evaluation of students' oral performances. Their time, cooperation, and professional contributions were valuable to the completion of this research.

DECLARATION OF USING AI TOOLS

Generative artificial intelligence tools were used during the preparation of this article to assist with language editing, organization, and refinement of the manuscript. All AI-assisted content was critically reviewed, verified, and revised by the authors. The authors take full responsibility for the accuracy, interpretation, citations, and final content of the article.

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